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Active learning mediated by worked examples in physics courses

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ABSTRACT

The statistical mechanics have been worked from books, traditional explanations on a board, and many exercise lists. This remark was brought by a graduate group of the *Universidad Industrial de Santander* who belonged to the subject of statistical mechanics between 2011 to 2020. First, the information was collected by a Likert test that contained questions about their general knowledge of statistical mechanics and misconceptions around specific topics. Based on the collected information, educational material known as worked examples from the test results was developed. Finally, the worked examples were incorporated using the service Google Colab which consists of a statement of the problem followed by a partially solved exercise and auto-explanation questions to complete the classwork. In this work, we presented graduates' opinion arrays about the course, the most critical topics in statistical mechanics for the survey students, and analyzed the probability of interaction from the different opinion vectors.

Keywords: digital worksheet; Likert test; misconceptions; opinion arrays; remote subjects.